Run II Upgrades

- Project Tools
 - MS Project, cost accounting, labor tracking
- Status Update (for Feb)
 - Budgeted (work performed / work scheduled)
 - M&S Obligations
 - Milestones
- Specific topics
 - Preview 04 shutdown
 - Preview e-cool, stacktail and 05 shutdown
- V3.0

Tools and Support

Status

- Still recovering from MSP2000 bug and its aftermath
 - changing to MSP2002 and completing v2.0 cleanup
- Still need to develop necessary project tools ← help is on the way?

Tools

- status input is working
 - need to improve report generation
 - improve status validation and feedback
- first M&S oblig and cost report generated
 - need to automate integration of cost report and combine with MSP budget estimate
- first effort report next month?
 - need to ...integrate...
- various DOE and Division questions
 - need to automate generation of cost, labor profiles and breakdown...

Status Report - end of Feb

Status input for end of Feb vs v2.0 corrected for major RIP (\$2M)

BCWP=\$10.3M, BCWS=\$11.5M Variance = \$1.2M, S/P = 89%

		■ BCWS Corrected for \$2M RIP						
WBS	Name	BCWS(Cor)	BCWP	Var(Cor)	P/S(Cor)			
1	Total	\$11,534,300	\$10,287,870	(\$1,246,430)	0.89			
26	Luminosity Upgrades - Jeff Spalding	\$10,067,523	\$8,752,029	(\$1,315,494)	0.87			
26.1	Protons on Pbar Target - Ioanis Kourbanis	\$896,693	\$756,185	(\$140,508)	0.84			
26.2	Pbar Acceptance - Steve Werkema	\$953,177	\$891,283	(\$61,894)	0.94			
26.3	Pbar Stacking and Cooling - Paul Derwent	\$3,119,766	\$2,768,261	(\$351,505)	0.89			
26.4	Tevatron High Luminosity - Vladimir Shiltsev	\$4,459,001	\$3,695,260	(\$763,741)	0.83			
26.6	Project Management - Jeff Spalding	\$638,886	\$641,040	\$2,154	1.00			
27	Maintenance and Reliability - Paul Czarapata	\$1,466,776	\$1,535,840	\$69,064	1.05			
27.1	2003 White Paper/Vulnerability Report	\$845,340	\$914,404	\$69,064	1.08			
27.2	Maintenance Improvements	\$593,516	\$593,516	\$0	1.00			
27.3	Project Management Oversight	\$27,920	\$27,920	\$0	1.00			

Variance Drivers:

\$150K parts ... e-cool@R Fab parts... TEL: \$0.5M

M&S FY04 Obligations (through Feb=0.42FY)

fnom coo			tions through I	YTD	,			
from accounting system		Estimate	OBL	RIP	Total Obl	BE-TO	TO/BE	
26&27			9525.79	1861.04	2068.82	3917.89	5607.90	0.41
26	Luminosity Upgrades		8143.13	1082.35	1983.82	3054.20	5088.93	0.38
20.26.1.1.0	Slip Stacking		416.34	60.21	151.66	211.87	204.47	0.51
20.26.1.2.0	Pbar Target and Sweepin	ng	64.25	11.9741				
20.26.1.3.0	MI Upgrades		0.00					
20.26.2.1.0	Lithium Lens		110.00	15.20		15.20	94.79	0.14
20.26.2.2.0	AP2 and DB		690.72	2.29		2.29	688.43	0.00
20.26.3.3.0	Stacktail Upgrade		1032.11	372.18	360.00	732.18	299.93	0.71
20.26.3.4.0	Recycler*		796.70					
20.26.3.5.0	Electron Cooling		1445.37	181.82	18.02	199.84	1245.53	0.14
20.26.3.6.0	Rapid Transfers		552.04	0.25	30.40	30.65	521.39	0.06
20.26.4.3.0	TEL		154.20	127.35	36.44	163.78	(9.58)	1.06
20.26.4.4.2.0	Separator Polarity Switch	hes	243.64	111.76		111.76	131.87	0.46
20.26.4.4.3.0	Standard Separators		83.78	1.50	10.15	11.65	72.13	0.14
20.26.4.4.4.0	New Separators		0.00	1.81		1.81	(1.81)	
20.26.4.6.X.0	Tev Instrumentation and	Controls	30.84			0.00	30.84	0.00
20.26.4.6.4.0	Tevatron BPM		1772.24	30.11	1365.76	1395.87	376.38	0.79
20.26.4.6.5.0	Tevatron IPM		276.99	71.82		71.82	205.17	0.26
20.26.4.6.6.0	B-Field Diagnostics		20.56					
20.26.4.6.9.0	Tev BLM-Abort		257.00		11.40	11.40	245.60	0.04
20.26.4.7.0	Tevatron Vacuum		46.26	0.47		0.47	45.79	0.01
20.26.4.8.0	Tevatron Alignment		180.93	7.30		7.30	173.62	0.04
20.26.6.0	Run II Lum Upgrades Mg	mt	0.00	86.30		86.30	(86.30)	
27	Maintenance & Relia	bility	1382.66	778.69	85.00	863.69	518.97	0.62
20.27.1.1.0	Linac Tubes		462.60	308.53		308.53	154.07	0.67
20.27.1.2.0	Orbump		154.20	0.48		0.48	153.72	0.00
20.27.1.3.0	Booster RF		0.00					
20.27.1.6.0	Transformers		236.44	130.08	85.00	215.08	21.36	0.91
20.27.1.7.0	MI Kicker		5.14					
20.27.1.8.0	Tev Low Beta Magnetics		30.84	24.91		24.91	5.93	0.81
20.27.1.9.0	Tev Centrifugal Cold Com	pressors	102.80					
20.27.1.11.0	Harmonic Filter Damping		20.56	22.70		22.70	(2.14)	1.10
20.27.2.1.0	Replace Tevatron Stands	1	61.68					
20.27.2.2.0	Booster Collimator		308.40	291.99		291.99	16.41	0.95
	Total FY04 Allocation		14039.00					
	Contingency		4513.21	47%	of base in	FY04 (41%	FY04-06)
	Recycler Dept*		283.00	131		131	152.00	0.46



oblig/base est = 41% but

est is front-loaded expect ~50% oblig at this point

65% of M&S is in purchases>\$100K

41% cont FY04-06

Milestones

WBS	Name	MS Clas:	Start	2004				
				Aug Sep Oct	Nov Dec		Mar Apr	May
26.4.8.1	Review Tevatron Alignment Plans (Milestone)	С	Fri 8/1/03					
26.1.1.6	Design Review (Milestone)	С	Thu 8/28/03	•				
26.5.1	Start Summer 03 Shutdown	С	Mon 9/8/03	•				
26.4.6.4.2	Tev BPM: Requirements Review (Milestone)	С	Mon 9/22/03	•				
26.4.6.5.1.5.11	Tev IPM Design Review, decision to proceed (Milestone)	С	Wed 10/1/03	•				
26.1.3.3.2	Review MI 2.5 MHz Acceleration (Milestone)	С	Thu 10/2/03	•				
26.6.2.1	Review: Tevatron Upgrade Plan	С	Mon 10/6/03					
26.3.4.2	Commissioning Parameters Defined (Milestone)	С	Fri 10/31/03	Ĭ)			
26.3.4.7.5.1	FY03 plan includes vacuum work in FY03 shutdown (Milestone)	С	Mon 11/17/03	·				
26.4.7.1	FY03 plan includes FY03 shutdown (Milestone)	С	Mon 11/17/03		Ō			
26.5.2	Finish Summer 03 Shutdown	С	Mon 11/17/03		Ŏ			
26.4.6.4.1.1.3.1.2	Core HW technical choice review complete	С	Tue 12/16/03		-			
26.1.2.1.4.3	New Target in Operation (Milestone)	Α	Fri 1/2/04					
26.3.4.9.2	Vacuum performance	С	Mon 1/19/04			Te'		
26.3.4.9.4	Vacuum and Machine admittence	С	Tue 1/27/04	Actual Date				
26.3.4.4	Commissioning Plan Evaluation (Milestone)	С	Mon 2/9/04	2/29				
26.3.4.9.6	MI to RR Trans >85% round trip <3 pi growth	С	Fri 2/27/04				•	
26.3.5.2.1	Pelletron extension parts received	С	Mon 3/1/04	2/17		1		
26.6.2.2	Review Recycler Commissioning Plan	Α	Mon 3/1/04	2/29			ĺ	
26.4.6.4.3.1.2.1.2	Core electronics PO complete	С	Fri 3/12/04	3/12		`⊘`		
26.3.4.9.8	Stacking Performance with 100E10	С	Mon 3/15/04	2/19		'		Rev
26.3.4.9.10	Equilibruim Properties at 200 E10	С	Mon 4/5/04		Recy	cler		
26.3.3.1.1.5	Review System Design: stacktail momentum (Milestone)	С	Fri 4/9/04	4/26		ı (ŏ	- 51
26.4.6.9.2	Review BLM-Abort upgrade Specifications	С	Fri 4/9/04	3/29		1 1	Ŏ	- T
26.1.4.4	Booster-MI Cogging Operational	С	Fri 4/16/04		C	oggind		
26.2.2.3.1.1.2	Decision to Proceed with AP2 BPM DAQ Upgrade	С	Fri 4/16/04		A	PŽ BPI	M Ō	
26.3.4.9.12	Recycler Rapid Transfer Commissioned	С	Tue 4/20/04	4/26 3/29 see la]	i ō	
26.4.6.4.3.1.2.1.4	Core electronics 1st modified board delivered	С	Wed 4/28/04				00) ∥
26.3.6.7.3	Review 8Gev energy match plan	С	Thu 4/29/04				l Ť∂	5 ∥
26.4.4.2.6	Polarity switches operational	С	Thu 5/6/04				7	Ō I
26.4.3.2.2	BBC: Wires - Report Review	С	Mon 5/10/04					ŎΙ
26.3.6.5.1.2	Review specifications and plan for transfer line BPM upgrade	С	Wed 5/12/04			1	•	ŎΙ
26.4.3.1.5	Review TEL R&D	С	Tue 5/18/04	see lo	iter (SUDSIK	sion	Ŏ
26.3.5.1.11	Demonstrate beam properties at Wide Band Lab (Milestone)	С	Fri 5/28/04					ď

Maintaining the Plan

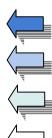
- The plan will continue to develop
 - as explicitly built into the plan via decision points
 - or from operational experience
 April-May → v3.0 by June
- Rebuild 2-4 times per year (via change control)
 - v2.0 is a [major] rebuild future rebuilds will be more minor
 - all scope/cost/schedule changes presented at Run II PMG
 - change control thresholds require Directorate approval
- Track status between rebuilds against current version
 - present at Run II PMG
 - done for Aug-Dec vs v1.0

Preview shutdown 2004

Start: Aug 23, Duration: 13 weeks. Driven by e-cool assuming prep work and some double-shifts.

- e-cooling BEAMLINE
- · 20 motorized quad stands in DB
- Replace D4Q4
- Move DRF2
- Injection septum common vacuum
- (Extraction kicker vacuum tube)
- · Install TEL2
- 4-6 more (standard) separators
- Install IPM
- Alignment level system for low beta quads





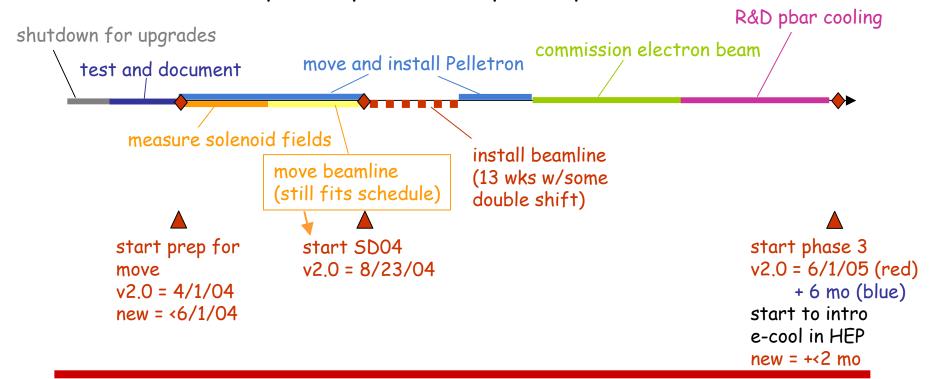
→ critical path analysis for SD04 at April PMG

e-cool sequence WBL > MI-31

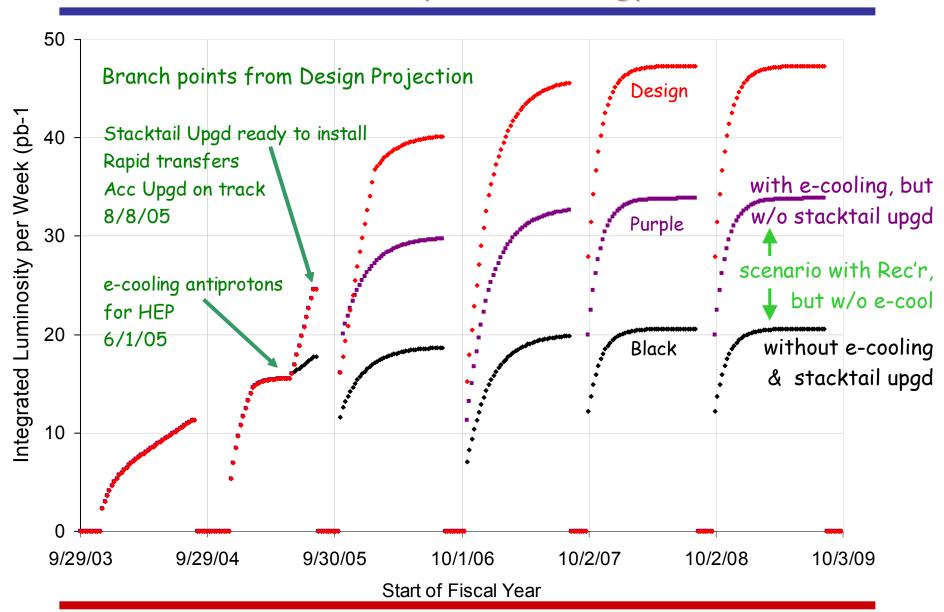
- 3 wk shutdown

test < May 28

- R&D → updated plan based on operating experience
 - new electron gun
 - new return line lattice.
 - benchmark optics at 4.3 MeV
 - (more operation for longer periods)
 - improved solenoid field measurement
- Review details April 9, update RLS April-May



Risk Analysis / Strategy



Preview shutdown 2005

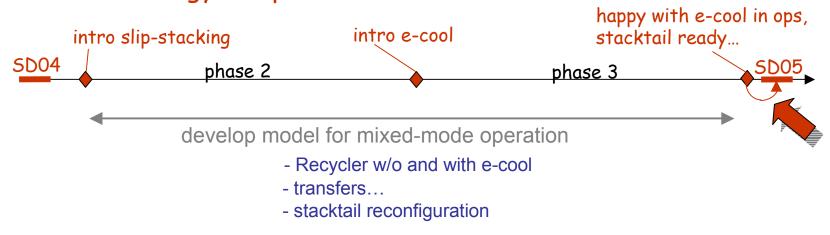
Stacktail upgrade

- Mech engineer available 100% by June (NUMI) ← work to minimize the impact
- (Technical review delayed)
- → est. ~2 months variance in completion date

Stacktail cooling installation (takes 8 wks) drives SD05

- follows the upgrade
- follows successful operation with e-cool

Review strategy for phase $2\rightarrow4...$



V3.0

By June

- v3.0
- re-evaluated use and need for contingency
 - move MI BPM purchase forward?
 - MI BLM upgrade? (~200K?)*
 - upgrade computers for beam-beam simulations? (\$35K) *change requests at May PMG?
- develop strategy for phase 2→4